

Claims

What is claimed is:

- 5 1. A tunable antenna matching circuit comprising:
a ferro-electric tunable component configured
to be coupled to an antenna;
a matching circuit comprising the ferro-
electric tunable component;
10 a control line operably coupled to the ferro-
electric component;
a control source electrically coupled to the
control line, the control source configured to
transmit a control signal on the control line;
15 wherein the ferro-electric component,
responsive to the control signal, adjusts the
impedance of the matching circuit.
2. The tunable antenna matching circuit of claim 1,
wherein the ferro-electric tunable component
20 comprises a ferro-electric tunable capacitor.
3. The tunable antenna matching circuit of claim 2,
further comprising a substrate wherein the

capacitor is directly mechanically coupled to the substrate.

4. The tunable antenna matching circuit of claim 1, further comprising:

5 a first inductor coupled, at a first end of the first inductor, to ground and configured to be coupled to an antenna at a second end of the first inductor;

10 a second inductor coupled, at a first end of the second inductor, to the second end of the first inductor;

15 a first capacitor coupled, at a first end of the first capacitor, to a second end of the second inductor and to ground at a second end of the first capacitor;

 a second capacitor coupled to the second end of the second inductor.

5. A wireless communication device comprising:

20 a battery;

 a transceiver;

 a user interface;

a housing encasing the battery and the transceiver and adapted to present the user interface external to the housing;

an antenna matching circuit, configured to be
5 coupled to an antenna and comprising a ferro-electric tunable component;

a control signal generator for generating a control signal;

a control line coupled to the control signal
10 generator and to the ferro-electric component;

a control source electrically coupled to the control line, the control source configured to transmit a control signal on the control line;

wherein the ferro-electric component,
15 responsive to the control signal, adjusts the impedance of the matching circuit.

6. The wireless communication device of claim 5, wherein the ferro-electric tunable component comprises a ferro-electric tunable capacitor.

20 7. The wireless communication device of claim 6, further comprising a substrate wherein the capacitor is directly mechanically coupled to the substrate.

8. The wireless communication device of claim 5,
further comprising:

5 a first inductor coupled, at a first end of
the first inductor, to ground and configured to be
coupled to an antenna at a second end of the first
inductor;

a second inductor coupled, at a first end of
the second inductor, to the second end of the
first inductor;

10 a first capacitor coupled, at a first end of
the first capacitor, to a second end of the second
inductor and to ground at a second end of the
first capacitor;

15 a second capacitor coupled to the second end
of the second inductor.